

SEED INDUSTRY ANALYSIS III

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SEED INDUSTRY ANALYSIS III

April 1 - 25, 1996

1. EXECUTIVE SUMMARY

1.1 Period and Terms of Assignment

The period of the present consultation including travel time was April 1 - 25 followed by several days at home station for report writing.

The author, James C. Delouche, was the only consultant involved during this third consultation (III) under CAPS in the area of Seed Industry Analysis.

1.2 Purposes and Tasks of Assignment

The principal purposes of the present consultation were to continue advisory services and assistance on policy, reforms and reorganization in the Egyptian Seeds Sector. The specific tasks included: evaluation of, and assistance with, seed legislation including seed certification and plant variety evaluation, release and registration; follow-up on implementation of seed sector reforms, especially liberalization and privatization of the seeds sector; coordination with MALR agencies, donors such as GTZ, and private and cooperative sector participants on review of short-, medium-, and long-term goals for the Egyptian seed industry; determination of need for "market control" of seeds and development of concept for suitable control system; and continued assistance with the transfer and utilization of delinting technologies for improvement of the quality and plantability of cotton seeds in Egypt.

1.3 Activities

Some activities under the consultation II, Dec 1 -17, 1995, were continued or followed-up to the present consultation. Eng. M. Salah Abd El Wanis, Undersecretary of CAS (now CASTC), Dr. B. Homeyer, leader of the GTZ Cotton Seed Delinting Project and Mr. Plambeck, project engineer, made a study visit in January, 1996, to Mississippi State University and three modern cotton seed delinting and processing operations in Mississippi. Consultants J. C. Delouche and C. Baskin were on hand for in-depth discussions of the applicability of things observed to the situation in Egypt and to provide additional information on quality assurance and control procedures. Baskin returned to Egypt in late January 1996 for a follow-up consultation on cotton seed quality under CAPS with emphasis on identification of major quality problems and training of selected seed analysts in quality evaluation of cotton seeds.

The main activities during the present consultation were as follows:

- Field trips to observe the emergence and stand establishment of mechanically delinted cotton seeds, the new and very impressive "long spike" wheats, field inspections and post-control of wheat.
- Review of regulations and procedures for implementation of new seeds legislation that have been or will be promulgated as Ministerial decrees with special attention to crop variety evaluation, release and registration procedures.
- Extensive discussions with CAS administration and leaders of the GTZ projects on the mid- and long-term goals and directions of seed industry development in Egypt and the need for a "workshop" or seminar to assess progress, clarify, reaffirm and/or establish mid- and long-range goals and develop a "blueprint" for the most efficient ways of accomplishing them.
- Review of the progress of liberalization and privatization of seeds production and marketing in Egypt.
- The appropriateness of a market control system for seeds at the present stage of seeds sector reform in Egypt and the timing of installation were given in-depth attention. A detailed briefing paper describing the concept, requirements and procedures for control of seeds at the market level (as contrasted to control of production and processing as per certification) was prepared and is presented in an ANNEX to this report.
- Deficiencies in extension and informational activities relating to seed industry development and increased use by farmers of high quality seeds of superior varieties were identified and examined with conclusions that these activities must be given more attention in the reform process underway and in the assistance provided for reform and reorganization.

1.4 Findings

The main findings are summarized below.

- Revised and/or new seeds legislation before the Egyptian parliament and already incorporated in Ministerial decrees provides a very adequate and modern legal frame for further development of the seeds industry in a market economy perspective. The seeds legislation includes provisions for plant breeder's rights but closer coordination is needed to ensure conformity of the provisions and administrative procedures issued as decrees with the current conventions of the Union for the Protection of Varieties (UPOV).

- Liberalization and privatization of seeds production and marketing continues slowly but steadily. The private sector and cooperatives produce and market most of the vegetable, potato, clover, and hybrid seeds purchased by farmers and a surprising portion of the seeds of self-pollinated crops such as rice, faba and wheat.

- Progress on introduction of advanced technologies for cotton planting seeds has been excellent. Almost all of the seeds planted for the current (1996) crop were mechanically delinted and there were none of the problems of poor emergence encountered last year and wrongly blamed on delinting. The planting rate was 30 kg/fd as compared to 70 kg/fd for non-delinted seeds, a savings of about 40,000 MT of "seeds" for industrial use. The GTZ financed acid delinting and processing plant is on schedule and should be operational at the end of this year. A draft proposal for four foundation seed gins and three additional acid delinting plants was prepared and presented to GTZ for consideration. This proposal essentially takes up the improvement of cotton seeds activity that was prominent in the NARP seeds component for several years then dropped.

- Reorganization of CAS to separate the production and marketing from the regulatory and certification functions into two independent Central Administrations is progressing very slowly. The process needs to be speeded up so that the certification project (GTZ) can be extended to more governorates and the two new central administrations, CASP and CASTC, can develop as envisaged and set forth in the reform plans.

- Priority attention needs to be given to installation of market control of seeds in Egypt for two reasons: first, seed kinds not taken into the certification schemes need to be controlled in some way; second, certification is being very slowly extended so a market control system is needed even for major crops included in the certification schemes until certification is fully established. Market control is a convenient and efficient system of seed control. Essentially all the requirements for its installation and implementation are available.

- Extension campaigns promoting use of high quality seeds of superior varieties and information services to seed industry participants on changes and activities in the seeds industry are very weak if not non-existent. These important activities for development of the seeds industry and improvement of crop agriculture generally must be given adequate attention and resources. Seed extension campaigns would require cooperation and collaboration of CAS (CASP and CASTC), ARC, extension services and the private companies and cooperatives. Vital information and news could be made available to the seeds industry in the form of a NEWSLETTER or RECORD prepared and published by the NSC secretariat.

- There is urgent need for a meeting of a small number of persons from agencies and donors involved in reform and reorganization of the seeds sector to assess progress,

clarify, reaffirm and/or establish mid- and long-range goals for seed industry development and develop a "blueprint" on the most efficient ways for accomplishing them. An appropriate format for a meeting of the type needed is a 2-day workshop or symposium under sponsorship of the NSC and an appropriate time would be during the period Sep - Oct, 1996.

1.5 Recommendations

Recommendations are in **Section 9**.

2. PURPOSES AND BACKGROUND OF PRESENT & PREVIOUS CONSULTATIONS

2.1 Purposes and Tasks of Present Consultation (III)

The principal purposes of the present consultation were to continue advisory services and assistance on policy, reforms and reorganization in the Egyptian Seeds Sector. The specific tasks included: evaluation of, and assistance with, seed legislation including seed certification and plant variety evaluation, release and registration; follow-up on implementation of seed sector reforms, especially liberalization and privatization of the seeds sector; coordination with MALR agencies, donors such as GTZ, and private and cooperative sector participants on review of short-, medium- and long-term goals for the Egyptian seed industry; determination of need for "market control" of seeds and development of a concept for suitable a control system; and continued assistance with the transfer and utilization of delinting technologies for improvement of the quality and plantability of cotton seeds in Egypt.

2.2 Background and Review of Previous Consultations

2.2.1 Consultations I and II

Seed industry consultations are provided for under the Contract for Performance, Analysis and Strategy (CAPS) Task Order #3 to review, follow-up and push reforms in the Egyptian seeds sector initiated under the NARP Seeds Component, and the Agricultural Policy Reform Program under the APCP. The tasks of the **Consultation I** (Aug 24 - Sep 17, 1995), which was about 16 months after the last consultation under NARP, were to review the progress on seed legislation and advise accordingly, coordinate implementation of the adopted reforms and reorganization with the objectives and activities under two GTZ seed related projects, provide further guidance on privatization and/or private sector-like reforms of the seed processing and distribution centers of the MALR, assist with planning of the 2nd Egyptian National Seed Conference scheduled for Dec 10-14, 1995, and advise and provide assistance on introduction of modern delinting technologies for cotton seeds to improve their quality and plantability (see Seed Industry Analysis I, by J. C. Delouche, DATEX, Inc., Sep, 1995). The main tasks of the **Consultation II**, Dec 1 -17, were assistance with and participation in the 2nd Egyptian National Seed Conference (Dec 10 - 14), review of administrative decrees and National Seed Council decisions relating to seed certification and seed pricing, reorganization of CAS into CASP and CASC, and coordination with the CAS and the GTZ project on study tour of cotton seed delinting, processing, treating and packaging operations in the USA in Jan 1996 and follow-up visit by Dr. Charles C. Baskin, cotton seed specialist, in Jan-Feb under CAPS Task Order #11 on quality control procedures and training. The Undersecretariat of CAS, MALR, requested two consultations in 1996 under CAPS: one in April to permit some field visits to observe field inspection procedures for wheat and

the emergence and stand establishment of mechanically delinted cotton seeds; the second in Sep and/or Oct during harvest of some summer crops.

2.2.2 Follow-up to Consultation II

Several home-station activities were undertaken during the period between Consultation II and the present assignment. Discussions were held and assistance rendered during the visit of Undersecretary M. Salah Abd El Wanis of CAS, Dr. B. Homeyer and associate of the GTZ cotton seed project to Mississippi in January. Plans for the 2nd consultation of Dr. Charles C. Baskin on cotton seeds quality in Jan-Feb were reviewed. Training programs for Egyptian participants on cotton seed quality control procedures at Mississippi State University were discussed and outlined with staff of the Seed Technology Laboratory.

3. ACTIVITIES, FINDINGS AND COMMENTARY

3.1 Seed Policy

Seed policy in Egypt, as in most other countries, is not some legislative act or administrative decree *per se*. Rather it is embodied in many of the laws and administrative decrees that relate to investments and business practices as well as agriculture, administrative regulations and procedures, the deliberations and decisions of the National Seed Council, and, very importantly, in the attitudes and actions of public sector officials involved in the management of seed related operations. Overall, seed policy in Egypt appears to be adequately enunciated and adequately progressive. There is no need for additional broad decrees in this area. Emphasis and impetus in seeds sector reform should continue to be focussed on implementation of the policies and reforms already clearly enunciated and adopted.

3.2 Seeds Sector Reform

Reform of the seeds sector continues gradually, with frequent hesitations and some detours, but overall it has remained on course and been reasonably satisfactory (see **ANNEX A, Seed Industry Analysis II**, Jan 1996). The main shortfall and/or variance in the reform process planned and specific reforms envisaged have been in prioritization, schedule or timetable, rather than objectives and goals. It is now very clear that the reforms scheduled for completion by 1995, but more realistically expected to be accomplished by 1996-97, will actually continue through most of this decade. The enormity of the tasks are simply too great, the relationships and linkages with other agencies and programs too complex, the inertia for maintenance of the *status quo* too pervasive, the economics only moderately attractive, and the will to reform not sufficiently compelling for a nearer term horizon. The main impediments to more rapid progress in implementation of the reforms were identified in the planning stage and have been fully operative: disposition of surplus staff; disposition of facilities that were designed and constructed for public service operations rather than commercial activities; low profit potential of seeds of major self-pollinated crops, wheat and rice; lack of proper conditioning facilities for cotton seeds; and the "politics" of seeds supply.

The foregoing notwithstanding, there has been very substantial progress in some of the key components of the seeds sector reform package as set forth in **ANNEX A** of the previous report and updated in the following sections.

3.3 Status of Selected Seed Sector Reforms & CAS Reorganization

3.3.1 Seed Legislation

The seed law has been comprehensively revised and reviewed and it is presently before the parliament. It contains modern and adequate provisions for:

- plant variety evaluation, release and registration;
- seed certification;
- labeling and market control of seeds;
- seed import and export;
- application to plant propagation materials as well as true seeds;
- plant breeder's rights or intellectual property rights for crop varieties;

Some of the "implementing particulars" or regulations needed for implementation of the law are still in the draft stage. Many others, however, including some very key provisions have been issued as Ministerial Decrees under the authority of the old, i.e., present, law and are operational.

3.3.2 Reorganization of CAS

The laborious tasks involved in separation of the seed production and certification/regulatory/service functions in the public sector are continuing. Separation of the two new Central Administrations, i.e., Central Administration for Seeds Production (CASP) and Central Administration for Seeds Testing and Certification (CASTC), is furthest along at central headquarters in Giza and in a few of the more progressive governorates. It has not, however, progressed to the point that the budgets are separate although it is claimed that some fiscal separation will be contained in the forthcoming budget. More rapid progress is needed on reorganization of the new Central Administrations and their physical and fiscal separation to permit extension of bonafide seed certification into governorates other than the two or three in which it has been confined due in major part to the confounding of the production and regulatory functions at the governorate and subgovernorate levels.

3.3.3 Seed Certification

There continues to be good progress in the establishment of bonafide seed certification systems in selected governorates with the substantial technical and financial assistance of the GTZ Seed Certification Project. Presently, main efforts are concentrated in Beni Seuf, Garbia, Giza and Dakalia governorates with emphasis on field inspections and seed testing services. Assistance is provided to other governorates as requested and justified on the basis of preparation and infrastructure for certification. It is expected that the governorates in which efforts are concentrated will become models for the subsequent country-wide extension of the certification system. A major impediment to more rapid progress is the lack of separation of production and certification/regulatory functions in many of the governorates, especially at the subgovernorate levels. Although much remains to be done to fully develop and upgrade seed certification, serious consideration is being given to joining some of the OECD seed certification schemes that are of special interest to Egypt. This needs to be supported and assisted in the interest of Egypt's seed exports not only to other countries in the WANA region, but, possibly, to EU countries. There is provision for a follow-up GTZ project on seed certification so assistance can be counted on for a substantial period.

3.3.4 Liberalization and Privatization of Seed Production & Marketing

There continues to be good progress in liberalization and "privatization" of seed production and marketing. The estimated portions of seeds of major crops purchased by farmers for planting *that are supplied by the private and cooperative sectors* are given in **Figure 1**. It is clear that the private and/or cooperative sectors are very active and dominant in production and/or marketing of those kinds of seeds that have good profit potential such as the hybrids, vegetables, potato, and bersem. Surprisingly, however, private companies and cooperatives are substantially involved in both the production and marketing of seed kinds such as rice, faba, and wheat that have limited profit potential. Cotton seeds are not included in the graph as they are presently monopolized by the government (public sector). This could, however, change within a few years when acid delinting and modern seed processing and treating procedures are well established for cotton seeds. Cotton seeds have very good profit potential since they are difficult to save in any event, and impossible to save in Egypt due to legal restrictions. Cotton farmers, therefore, have to buy seeds for each crop just as do farmers growing hybrid maize and market vegetables. Although interest in production of seeds of rice, wheat and other self-pollinated crops is increasing there should be no expectation that the public sector will be able to cease production of these sorts of seeds for the foreseeable future.

3.3.5 Seed Renewal or Replacement Rates

Estimated seed renewal or replacement rates for major crops in Egypt are given in **Figure 2**. The replacement rate for cotton is 100% as the farmers cannot and are not allowed to

save seeds. The replacement rate for wheat is about 35% which is somewhat above that in other countries with irrigated wheat culture, e.g., India. Rates for the other major crops except maize are relatively high so little if any quantitative market growth can be expected. There is, however, ample room for qualitative market growth. Interestingly the replacement rate for the whole 2 million feddan maize crop appears to be only about 40%. Since it must be 100% for farmers planting hybrid maize varieties, about two-thirds of the maize crop must be planted with the less productive non-hybrids, i.e., open pollinated or composite varieties for which seeds can be "saved." Thus, there is substantial room for further growth of the maize seeds industry which is predominantly private sector. Presently, about 12,000 MT of hybrid seeds are marketed. A good extension program for improved maize culture and an equitable market for the grain produced should result in an 80% or so use of hybrid varieties which would require about twice as many seeds as are presently marketed.

3.3.6 Seed Pricing

Seed pricing is being progressively liberated. Prices continue to rise. This year's seed prices are given below.

Wheat - contract price for seeds in LE 80/ard and selling price is LE 157/ard, thus nearly 2X the purchase price. This is nearly in line with wheat seed prices in many developed countries. Next season *there will be a differential in price among wheat varieties*, seeds of the new long spike or head wheats will be about 25% more.

Rice - contract price is about LE 80 and 100/ard for the best and common varieties, respectively, with selling prices of LE 140 and 174/ard. In terms of metric tons the price relationships are - purchasing price for new varieties is LE 800/MT, old varieties LE 610/MT, selling prices are LE 1433/MT for new varieties and LE 1000/MT for old varieties. Interestingly rice seeds are less a % of grain price than wheat. Note that there is price differentiation according to variety.

Hybrid Maize - prices are liberated and set by private companies, about LE 7/kg for single cross seeds and LE 3 - 4/kg for double cross seeds.

Cotton - selling price is LE 200/ard which is enough to plant 4 fds; this is about 2 1/2 X the purchase price, an increase over the 1995 price of 2X the purchase price.

NOTE. There is finally some differentiation in price among varieties of the self pollinated crops. *This is important in that it signals to farmers and/or affirms their perceptions that all varieties do not have the same value* as suggested with uniform seed prices for all varieties. Differential pricing highlights the value added in variety and makes farmers variety conscious. Differential pricing also permits seed producers to obtain some profit when the seeds are "new" before farmers begin to "save" them.

Overall it must be concluded that there has been a great liberalization in seed pricing from the time just a few years ago when seeds were heavily subsidized, and that seed pricing is getting very close to being "market set."

3.3.7 Crop Variety Evaluation, Release & Registration

There has been excellent progress in the area of crop variety evaluation, release and registration. The system has been greatly reformed as described in the previous report (**Seed Industry Analysis II, section 5.1**), and is codified in the new and revised seeds legislation before the Parliament. Probably for the first time, the crop varieties available for Egyptian farmers are all described and "formally" registered. This must be judged a rather remarkable feat as some of the research units in ARC have long held the position that they did not need to bother with describing varieties and applying for release and registration. The current list of registered varieties in Egypt (excluding most imported vegetable varieties) is in **ANNEX A**. The year of registration does not necessarily mean the year of release since varieties of some important crops, e.g., cotton, had not been described and registered although available to farmers and in use for many years.

Much remains to be done to firmly establish a variety evaluation, release and registration system that in most aspects would be in conformity with that in the European Union, a principal seed trading partner for Egypt. The GTZ seed certification group organized a study tour of variety evaluation and registration in Spain in April which was most appropriate since Spain is one of the newest members of the EU and thus still involved in developing its agricultural and other systems to EU standards. Valuable information and insights were obtained.

3.4 Seed Industry Associations

There is ample recognition and appreciation of the benefits that could be gathered from organization of the seed industry along the lines of a trade association, or associations, but little if any progress is evident. The "thinking" and "prioritization" recommended for this matter in the previous report is still to be addressed (see discussion in Section 6.4).

4. COTTON SEEDS IMPROVEMENT

The transfer and utilization of cotton seed delinting and processing technologies to improve the quality and plantability of cotton seeds in Egypt continues to receive major attention and assistance. Dr. B. Homeyer, COP, GTZ Cotton Seed Delinting Project, Mr. Plambeck, engineer, and Eng. M. Salah Abd El Wanis, Undersecretary, Central Administration for Seed Testing and Certification (CASTC) made a study visit to Mississippi, USA, to observe and study modern cotton seed delinting and processing procedures and operational management in Jan. 1996. Extended and detailed discussions of the technologies involved in acid delinting, environmental issues, quality evaluation and control systems were held with managers and technicians of three major and modern cotton seed processing operations and with specialists of Mississippi State University's seed technology group including Drs. Charles C. Baskin and James C. Delouche, cotton seed experts and seed industry consultants under USAID/CAPS. Dr. Baskin did a 3-week follow-up consultation on cotton seed quality in Jan-Feb. He identified the major quality problems for cotton seeds, suggested appropriate quality assurance and control procedures, and conducted intensive training for selected technicians.

GTZ is financing one acid delinting and processing plant of about 4-5TPH capacity which should be operational for the 1996 seeds. There is also a proposal before GTZ for financing and assistance for dedicated foundation seed ginneries and three more acid delinting plants, as discussed in the next section.

Mechanically delinted seeds were used for planting most of the 1996 crop. Mechanical delinting is an interim technology utilizing equipment available in the cotton seed (oil seeds) crushing plants. The results obtained with 30 kg of mechanically delinted seeds per feddan as compared to 70 kg/fd with gin run undelinted seeds were excellent. The "savings" of cotton seeds for other industrial purposes as a result of being able to reduce the planting rate from 70 kg/fd for undelinted seeds to 30 kg/fd for mechanically delinted seeds, and eventually to 15 kg/fd for fully acid delinted seeds are and will be considerable as shown in **Figure 3**. The 30,000 MT of seeds saved by using mechanically delinted seeds and the estimated 55,000 MT saving realized with the use of fully delinted seeds have estimated industrial values of LE 10.5 and 19.25 million, respectively.

5. GTZ ASSISTANCE PROGRAMS

GTZ has provided major assistance for reform, reorganization and modernization of the seeds sector in Egypt since 1987. During the past two years this assistance has been greatly extended and expanded. Present assistance projects and objectives are briefly outlined below.

5.1 Improvement and Decentralization of Governmental Seed Production and Seed Marketing Project (Chris Weisbecker)

This is a new project that follows up the efforts in improvement of seed production that were initiated in 1987. The first phase, which if for three years will focus on two seed centers: the seed center at Kafra Saka in Sharkia governorate and the seed center at Sherbin. Later the Fayoum governorate might be taken in, as there is a GTZ effort on cooperatives in the governorate. These areas were selected on the basis of ease in separation of the production and certification functions. The GTZ TA staff consists of three persons with Chris Weisbecker as leader, plus an economist and a marketing specialist. The objectives are essentially to decentralize seed production and marketing into the target seed centers and develop them into private sector-like seed companies. These would serve as "learning" experiences and ultimately as models for decentralization and "privatizing" the seed centers and activities in other governorates. The work involves reorganization of the centers into the various divisions such as production, administration, marketing, etc. Peat Marwick is fitting an IMS with an accounting package to network the centers to central headquarters in Giza. There is provision for a follow-up phase in the project. Considerable economic data on seed production and marketing are being collected for use in planning other interventions and determining the most appropriate private-public sector balance for seed industry development.

5.2 Cotton Seed Improvement Projects (B. Homeyer)

The cotton seed activities are part of a broader GTZ financed program on cotton, including marketing and IPM. The firm seed component is one acid delinting plant that is being established at Sakha at the cost of DM 3 million for the equipment. The GOE is providing the infrastructure, i.e., buildings, utilities, etc. A second aspect of the cotton seed work would essentially take up the ginning and delinting elements of the NARP Seeds Component which were canceled in 1993. A proposal for four new gins designed and dedicated for ginning of foundation and registered cotton seeds and three acid delinting and seed processing plants (four counting the one already funded and under construction at Sakha) will be submitted to GTZ and the German government this year (1996) for consideration in the 1997 budget. If the proposal is accepted for appraisal and the appraisal is favorable, work on one or more of the gin-delinting plant installations could begin sometime in 1998. Considering all the factors that affect development activities in Egypt, a realistic completion horizon for the gins and delinting plants would

be 2000. The gins and delinting plants would be located on four sites - one gin and one delinting plant per site. Two of the sites would be Sakha and Sids with the other two to be selected later. The capacity of the gins and delinting plants would be matched to produce about 4.5 to 5.0 MT per hour of delinted, processed and treated seeds. Each of the four gin-delinting plant sets would be under a public Development Company and managed and operated like a private company to the extent feasible. Under a Ministerial decree profits would be retained for re-investment. As soon as the units are operating well, perhaps after 3 - 5 years, they would be offered for sale to private investors. The expected economic benefits to the cotton industry and especially to the cotton farmer from the use of more varietally pure and fully processed/treated seeds would be very substantial even assuming only a 5 - 7% increase in yield of lint (fibers) per feddan.

5.3 Seed Certification (H. Froemberg)

The certification project has the overall objective of establishing a bonafide certification system for seeds and selected plant materials in Egypt. It is assisting with the reorganization to separate the production and certification functions and the improvement of essential services and activities for certification in selected governorates. The focus is on seed testing services and field inspections in the governorates of Beni Seuf (Sids), and Garbia (Tanta), and on seed testing in Giza and Dakalia (Mansouria). Assistance is provided to other governorates, especially Kafr Sheik, as requested and justified in terms of preparation. There is provision for a follow-up phase.

6. SOME ISSUES AND SUGGESTIONS

6.1 Control of Public Seed Processing Centers

There has been some discussion of transferring the seed processing centers in the public sector (i.e., presently with CAS but being transferred to the new Central Administration for Seed Production) to another organization such as the Egyptian Agriculture Organization (EAO). Up to the time of the present reforms in the seeds sector, (up to about 1992), EAO controlled about half of the public sector seed processing plants and "participated in the seed industry" as a sort of contract or custom seed processor. Seeds assigned to EAO processing centers were processed for a prescribed fee per unit weight. EAO's performance was very poor. Its only apparent interest in seeds supply was to collect the processing fee. There was no discernible acceptance or sense of responsibility for the quality of the seeds. CAS was held responsible even for the seeds processed by EAO over which it had no control.

Efforts by EAO or another agency to gain control of the seed processing centers and to operate them as a sort of seed "laundry" without commitment and investment for full participation in seed production and marketing must be successfully resisted to prevent dismemberment of the reforms underway and reversion of the "seed industry" to its rather dismal former situation.

6.2 Seed Processing Capacity in Egypt

Seed processing capacity in Egypt is now fully capable of handling the quantities of seeds of various kinds likely to be needed in Egypt in the foreseeable future, excepting cotton seeds. Most of this capacity is in the public sector and has been established with financial assistance of international loans and several bilateral donors. Current policy is to make the seed processing centers available to private seed companies and cooperatives by direct sale, lease or custom/contract operations. While none of the centers have been sold, cooperatives in some governorates are interested and their lease or custom use has greatly increased.

Efforts to sell or lease some of the more favorably located processing centers, or increase their custom/contract operations, should be intensified and extended. Terms should be reasonable and widely publicized. Since the cooperatives are more likely to be interested in buying or long-term leasing of processing centers than private companies they should be especially targeted for publicity and discussions/negotiations.

In view of the adequacy of processing capacity, and the policy for participation of the private sector to the extent economically feasible, *the government should not construct additional processing centers in the public sector regardless of source or favorableness*

of financing. New processing plants as and where needed should be constructed by the private sector.

6.3 Extension

There is urgent need for an adequate extension campaign to inform and demonstrate to farmers the advantages and benefits of new and improved seeds and plant varieties. The present effort is inadequate and uncoordinated. Although Egyptian farmers are quite progressive and respond well to market and other incentives, an aggressive and innovative extension campaign could increase farmers' use of seeds of higher yielding varieties and new crops available in the market, e.g., increase the use of hybrid varieties of maize from about 40% of the area to well above 60% and eventually above 80%. Since the hybrid varieties are much more productive than the open pollinated and composite varieties, the effects of increased use of hybrid varieties on total production could be enormous. Likewise, the more rapid adoption of new "types" of crop varieties, such as the "long" spike or head wheats, some of the new rice varieties, and new crops such as sunflower brought about by more aggressive and better coordinated extension campaigns would contribute very substantially to the country's agriculture sector goals of increased production and diversification.

6.4 Informational Services

The National Seeds Council continues to function very well in guiding the seed industry through the reforms and reorganization that is underway. They are addressing the issues that arise as a result of the reforms and new developments and technologies in the global perspective that could affect Egyptian agriculture. The agenda and minutes of the NSC meetings, and the decisions taken or deferred, are crucial information for the private companies, cooperatives, public agencies, and merchants involved in seed production, and/or marketing and the research agencies and universities involved in varietal development and related seed activities. While these are available in the Secretariat files, and are presumably communicated to the various interest groups by their representatives on the NSC, there is need for fuller, more open, and more frequent communication of NSC activities and actions and other seed-related news to all interest groups and key individuals. This level of communication could be achieved most conveniently through a quarterly or biannual NSC Newsletter or Record that would record the agendas, pertinent (and selected) minutes and decisions of NSC meetings, and related Ministerial decrees. The newsletter would report on matters and topics of interest to the seeds industry such as statistics of seed imports and export, actions of the Variety Release and Registration Commission, new varieties registered, the seed production "plan", training opportunities available to the private and cooperative seed workers, meetings of interest and so on a Newsletter or Record of this sort would prevent misunderstandings arising from lack of information or misinformation, stimulate interest in the seed business, insure that essential information related to the seed industry is accessible to all interested

parties/persons, provide a mechanism for soliciting "feedback" from industry participants on issues and decisions, and, possibly, as a catalyst for organizing the seed trade association(s).

6.5 Seed Producer and Trade Association(s)

The organization of one to several seed producer and trade associations was one of the goals and benchmarks under the NARP Seeds Component. Organization of producers and merchants involved in the seed industry has been strongly promoted and numerous attempts have been made without success. There has even been serious discussion and negotiations on establishment of a government authorized Union of Seed Producers which failed due to disagreement on the Board of Directors. It was also recognized that a union type organization would be strongly influenced if not controlled by the MALR. This was not viewed as desirable by the MALR or the private sector. Despite these disappointments, organization of the seed industry along trade association lines should continue as a priority matter, and be encouraged and assisted in every possible way. Considering experiences in other countries, two modes of organization should be set forth and promoted. One is for an umbrella "seed trade association" with several divisions according to interests, e.g., Seed Dealers and Merchants, Seed Companies and Cooperatives (involved in both production and marketing), Certified Seed Growers, Seed Importers, and so on. The other is for independent seed associations organized according to interests, i.e., Certified Seed Growers, Seed Companies and Cooperatives, Seed Merchants and Traders.

6.6 Plant Breeder's Rights

The provisions for plant variety rights in the revised and new seeds legislation before parliament will provide a suitable legal framework for implementation of an intellectual property rights system compatible with that already in operation in an increasing number of countries. It is not too soon to begin preparation of the protocols, rules and procedures for implementation of the system that conforms in all essential aspects with the current UPOV conventions. Conformity with the UPOV conventions could and should be assured through thorough review of draft rules and regulations by UPOV officers.

6.7 Collaboration and Cooperation

There is need for closer cooperation and more collaboration among CAS (CASTC, CASP), ARC, the Agricultural Universities, the specialized cooperatives and the private seed companies and traders. Distrust, unnecessary competitiveness, and lack of interest or concern continue to spoil cooperation and collaboration that would be tremendously beneficial to the seed industry and agriculture in general. The best efforts of all are required to ensure that supplies of breeder and foundation seeds are adequate and equitably allocated, that candidate varieties are properly and promptly examined and

registered for use if suitable, that persuasive extension campaigns and demonstrations are organized and conducted to increase farmer use of good quality seeds, that the new varieties and seeds are planted and cultured properly, and so on. Efforts to resolve differences among the public agencies and private companies involved in the seed industry must be intensified.

6.8 Vehicles from NARP Inputs

The full complement of vehicles for CAS (CASTC, CASP) scheduled under NARP have still not been delivered to CAS, although the vehicles were purchased and are under MALR. The allocation was for 66 but only 20 have been delivered. Implementation of bonafide certification, market control, and the several service programs for the seed industry are very dependent on assured and timely transport and mobility of inspectors and other field personnel. The full allocation of vehicles would provide the needed transportation and mobility. USAID should continue to press for allocation of vehicles as intended at the time purchase was authorized.

7. GOALS AND DIRECTION OF EGYPTIAN SEED INDUSTRY

The goals and direction(s) in seed industry development in Egypt were among the first matters addressed during this consultation. There is concern that short-, mid-, and long-term goals of the seed sector reforms, initiated in 1992, are not as clear as they ought to be. In a sense, the focus on "fixing" some of the main components of a seeds supply system has caused a blurring if not obscurity in the visions of what the industry should be like, and is capable of in 2000, 2010 and even the longer term. These concerns and perceptions relating to the goals and direction of seed industry development were discussed during a meeting called by Undersecretary Salah Wanis on Thursday, April 11. USAID consultant Delouche, and the leaders of the three GTZ seed projects, Dr. B. Homeyer, Dr. H. Fromberg, and C. Weisbecken attended. All participants agreed that very significant changes had taken place in the seed industry in the past 5 years. Many decrees had been issued and very substantial reforms were on-going. Very soon in the discussions, however, a general feeling developed that the goals and directions of seed industry development were indeed obscured in the focus on changes and activities within the components being specifically assisted, e.g., seed certification, and that it would be very useful, if not essential, to "stand back" from the changes and ongoing activities to see where the industry is going and should go: in a sense to shift the focus from the components (trees) being fixed to what sort of seed industry (forest) might best serve Egyptian agriculture in the mid- and long-term.

There was a consensus that the 2nd Egyptian National Seed Conference held in December, 1995, important and useful as it was, was not a suitable vehicle for reviewing, assessing, identifying and/or reaffirming the goals and directions of seed industry development in Egypt. The view is that these matters should be addressed this year by a small, select group, perhaps a task force from the National Seeds Council, and representatives from GTZ and USAID and that the most appropriate forum would be a two-day workshop that would review changes in the seed industry, identify the main obstacles to further development, establish priorities for overcoming obstacles and impediments, and, most importantly, define and/or clarify the mid- and long-term goals of development with a "blueprint" for their accomplishment. There would have to be a lot of preparation to ensure that the workshop accomplishes what is intended and expected. This preparation would include a detailed agenda, appointment of discussion leaders and resource persons, preparation of briefing papers on the major components and aspects of a seeds industry, and alternative "visions" of what the Egyptian seed industry should be in 2000, 2010 and later.

The view of participants in the meeting was that the workshop should be held at a convenient time during the period September - October, 1996, and that preparations should begin soon. C. Delouche agreed to develop a draft concept of the workshop and a detailed agenda for submission to Undersecretary Salah Wanis by June 1.

8. MARKET CONTROL OF SEEDS

There has been considerable progress in the assurance and control of seed quality in Egypt since 1990. Before then, "seed certification" and contract seed production were inextricably mixed, i.e., certification was organized and handled as an accessory or supplemental activity in seed production rather than as the separate, independent, officially sanctioned objective quality control service that it is and must be. As a consequence most of the crucial controls in certification, such as field and facility inspections were routinely handled as production supervision activities. Responsibility for quality assurance/control was divided among CAS, EAO and PBDAC, the three main agencies involved. The result was that it was overly diluted and mostly misplaced. In many instances CAS was held responsible for quality problems related to activities omitted or overlooked by the other agencies. Indeed, the omission of operations and/or processes was often in their economic interest. Presently there is recognition and full appreciation that bonafide, internationally acceptable seed certification must be performed by an independent agency and wholly separated from the production functions. A decree has been issued and is being implemented for the reorganization of CAS into a Central Agency for Seed Testing and Certification (CASTC), and a Central Agency for Production of Seeds (CAPS). Reorganization involves the separation of functions, budgets, physical facilities, vehicles and the reassignment of more than 5000 personnel at the center and in the governorates and down to district level. It has been difficult and traumatic, thus the slow and deliberate pace of reorganization is not surprising.

Certification is well established in governorates targeted by the long term GTZ-funded improved seeds production and distribution programs certification will be extended country wide under the present GTZ companion project on Seed Certification and its probable follow-up. Emphasis is on the main stream and more important seed kinds of wheat, rice, maize, sorghum, faba, and perhaps sunflower. In the near- and mid-term, experience and resources will probably limit certification to wheat, rice, barley, maize, cotton, faba and possibly onions. These are the most important crops, in the most progressive governorates. Considering both the resources required and the probable benefits, certification, even in the long-term, should probably be limited to the most important crops. (The scope of certification is one of the topics that needs to be discussed and settled in the Workshop on Goals and Directions of Seed Industry Development in Egypt proposed in **Section 7.**)

For other kinds of seeds, and there are many other kinds planted in Egypt, for imported seeds, for seeds of main crops produced and marketed in the less progressive governorates outside the certification system, control of quality can be most conveniently and economically applied at the market level through appropriate regulations requiring the labeling of seeds offered in the market for specified quality factors and associated information on source and seller with enforcement through licensing of seed merchants and inspections of seeds in the market for truthfulness-of-labeling.

The seeds sector reforms have reached the point where installation of market controls needs to be seriously considered. The new and revised seed legislation provides an adequate legal frame for market control and some of the essential decrees on testing methods, registration and licensing of seed dealers, seed labeling, and so on have been issued. There are enough seed testing laboratories for determination of truthfulness-in-labeling, and there are sufficient personnel in CAS or CASTC, as it is now termed. The only crucial need is the conferring of "police" powers on seed inspectors and the establishment of some sort of simple administrative law procedures.

Market control of seeds is discussed in detail in **ANNEX B**.

9. RECOMMENDATIONS

Some of the recommendations made in the previous report (Jan, 1996) remain applicable and timely. They are reaffirmed below along with additional ones arising from the present consultation.

- **Plant Variety Release and Registration.** With the transfer of responsibility for plant variety examination, release and registration from ARC to the Extension Sector, there is opportunity to finally resolve the several issues that have long invested the process, i.e., bias and inefficiency. It is absolutely critical that the organizational structure and membership of the responsible committee and its procedures, protocols and criteria, which are presently under study, be carefully and deliberately crafted . This is to insure that the interests of Egyptian agriculture are adequately protected without unnecessarily and unwarrantedly impeding access of legitimate breeding firms and persons to registration, and delaying or denying benefits of genetic improvements in crops to farmers and consumers.
- **Plant Breeder's Rights.** The provisions for plant breeder's rights in the new and revised seeds legislation before parliament and in draft decrees needs to be reviewed by UPOV specialists to ensure conformity with the latest UPOV conventions.
- **Seed Marketing Control.** Seed industry development in Egypt has reached a stage where a market control system for seeds needs to be installed. This is needed to maintain a suitable balance in seed industry development and establish a capacity to accommodate changes that are forthcoming. The system should be based on the well tested truthfulness-in-labeling philosophy and related concepts.
- **Seed Extension and Informational Services.** Priority attention and adequate resources need to be given to preparation and implementation of "use good seeds" extension campaigns and development of an informational newsletter to keep participants in the seeds industry fully informed of changes and opportunities.
- **Reorganization of CAS.** Highest priority should be given to the reorganization of CAS into CASTC for Seed Testing and Certification and CASP.
- **Cotton Seed Improvement.** Very rapid progress is being made in the improvement of cotton planting seeds through introduction of modern technology and installation of a rigorous quality assurance system with major financing under GTZ projects. *USAID should continue to cooperate in this important area and support and assist the efforts underway in ways that are most appropriate and possible, i.e., technical expertise, technical assistance, and training.*

- **Seed Industry Development Goals and Directions.** A workshop or symposium (2-day) should be organized under the NSC with participation of GTZ and USAID and the private and cooperative sectors. This event should be scheduled at a convenient time during the period Sep.-Oct. to assess the progress in seeds sector reform and reorganization, identify major impediments and ways they can best be obviated, clarify, reaffirm and/or establish mid- and long term goals for the Egyptian seed industry and prepare a "blueprint" for accomplishing them. Considerable preparation will be required to assure that the workshop achieves its intended objectives.

- **Follow-up Consultation.** The MALR (CASTC, CASP) feels that the 2nd of the two consultations requested for 1996 should address two main tasks: development of a concept for the workshop (or symposium) recommended above along with a detailed agenda, and coordination of other preparations that would ensure accomplishment of its aims; and market control of seeds and development of seed extension and informational programs. This consultant (Delouche) agreed to develop a concept and tentative agenda for the workshop, prepare lists of briefing papers needed, and lead discussants for transmittal to Undersecretary Salah Wanis by June 1. He is also to provide other preparatory assistance as might be needed. The consultation should be scheduled for a maximum of three weeks in Sep. and/or Oct., 1996 taking into account the exact timing of the workshop or symposium.

ANNEX A

LIST OF REGISTERED FIELD CROP VARIETIES IN EGYPT

| <u>Crop</u> | <u>Variety Name</u> | <u>Breeder/ Developer</u> | <u>Registration No. & Date</u> |
|----------------------------|---------------------|-------------------------------|--|
| <u>Alfalfa*</u> | Nubaria 1 | ARC-FCRI | 1192 - 1995 |
| | Sewa 1 | " " | 1192 - 1995 |
| | Giza 1 | " " | 1192 - 1995 |
| | Ismalia | " " | 1192 - 1995 |
| <u>Barley*</u> | 6-row Giza 125 | " " | 390 - 1995 |
| | Giza 126 | " " | 390 - 1995 |
| | 2-row Giza 127 | " " | 390 - 1995 |
| | Giza 128 | " " | 390 - 1995 |
| <u>Chickpea</u> | Giza 195 | " " | 8 - 1995 |
| | Giza 531 | " " | 8 - 1995 |
| <u>Clover, Berseem</u> | Giza 6 | " " | 936 - 1988 |
| | Giza 10 | " " | 936 - 1988 |
| | Gemmeiza 1 | " " | 1192 - 1995 |
| | Serwe | " " | 1192 - 1995 |
| | Sakha 4 | " " | 1192 - 1995 |
| | Hilali | " " | 1192 - 1995 |
| <u>Cotton</u> | Giza 45 (ELS, EF) | ARC-CRI | 37 - 1996 |
| | Giza 70 (ELS) | " " | 37 - 1996 |
| | Giza 76 (ELS) | " " | 37 - 1996 |
| | Giza 77 (ELS) | " " | 37 - 1996 |
| | Giza 84 (ELS) | " " | 37 - 1996 |
| | Giza 75 (Lotus, LS) | " " | 37 - 1996 |
| | Giza 81 (LS) | " " | 37 - 1996 |
| | Mobarak 93 (LS) | " " | 37 - 1996 |
| <u>Crop</u> | <u>Variety Name</u> | <u>Breeder/ Developer</u> | <u>Registration No. & Date</u> |
| <u>Cotton</u> | Giza 86 (LS) | " " | 37 - 1996 |

| | | | |
|-----------------------|--------------------|----------|-------------|
| | Dandara (LS) | " " | 37 - 1996 |
| | Giza 80 (LS) | " " | 37 - 1996 |
| | Giza 83 (LS) | " " | 37 - 1996 |
| <u>Faba Bean</u> | Giza 674 | ARC-FCRI | 1192 - 1995 |
| | Giza 429 | " " | 1192 - 1995 |
| | Giza 643 | " " | 1192 - 1995 |
| | Giza 714 | " " | 1192 - 1995 |
| | Giza 716 | " " | 1192 - 1995 |
| | Giza 717 | " " | 1192 - 1995 |
| | Giza 461 | " " | 1192 - 1995 |
| <u>Flax-Linseed</u> | Giza 7 | " " | 1700 - 1990 |
| | Giza 8 | " " | 1700 - 1990 |
| <u>Lentils</u> | Giza 370 | " " | 1192 - 1995 |
| <u>Maize</u> | Sids 7 | " " | 1700 - 1990 |
| <u>a.White Lines</u> | Sids 34 | " " | 1700 - 1990 |
| | Sids 35 | " " | 1700 - 1990 |
| | Sids 58 | " " | 1700 - 1990 |
| | Sids 62 | " " | 1700 - 1990 |
| | Sids 63 | " " | 1700 - 1990 |
| | Giza 602 | " " | 1700 - 1993 |
| | Giza 603 | " " | 1700 - 1993 |
| | Giza 628 | " " | 1700 - 1993 |
| | Giza 628 (Sterile) | " " | 1533 - 1993 |
| <u>b.Yellow Lines</u> | Giza 614 | " " | 1533 - 1993 |
| | Giza 630 | " " | 1533 - 1993 |
| | Giza 630 (Sterile) | " " | 1533 - 1993 |
| | Giza 638 | " " | 1533 - 1993 |
| | Giza 638 (Sterile) | " " | 1533 - 1993 |
| | Giza 642 | " " | 1533 - 1993 |
| | Giza 642 (Sterile) | " " | 1533 - 1993 |
| | Giza 647 | " " | 1533 - 1993 |

| <u>Crop</u> | <u>Variety Name</u> | <u>Breeder/ Developer</u> | <u>Registration No. & Date</u> |
|---------------------|---------------------|-------------------------------|--|
| <u>Maize-cont'd</u> | | | |
| <u>c.1X-White</u> | Maize 1X 10 | ARC-FCRI | 457 - 1991 |

| | | | |
|----------------------|-------------------------------------|-----------------|-------------|
| | Maize 1X 9 | " " | 649 - 1992 |
| | Maize 1X 103 | " " | 649 - 1992 |
| | Giza 122 | " " | 1533 - 1993 |
| | Giza 123 | " " | 1533 - 1993 |
| | Watania 4 | Nat. Seed Co. | 749 - 1994 |
| | Giza 124 | ARC-FCRI | 390 - 1995 |
| | Giza 129 | " " | 390 - 1995 |
| | Giza 156 | " " | 390 - 1995 |
| | Giza 161 | " " | 390 - 1995 |
| | Egaseed 13 Bashir Egyptian Seed Co. | | 878 - 1995 |
| <u>d.1X Yellow</u> | Giza 151 | ARC-FCRI | 1533 - 1993 |
| | Giza 152 | " " | 1533 - 1993 |
| | Giza 153 | " " | 1533 - 1993 |
| | Giza 154 | " " | 1533 - 1993 |
| | Giza 155 | " " | 1533 - 1993 |
| | Pioneer 3062 | Pioneer Hi-bred | 1803 - 1996 |
| <u>e.2X White</u> | Hyb. 73120-Fattah | " " | 936 - 1988 |
| | Hyb. 73115-Amone | " " | 936 - 1988 |
| | 2X Hybrid 204 | ARC-FCRI | 1189 - 1989 |
| | 2X Hybrid 215 | " " | 1189 - 1989 |
| | 2X Hybrid 217 | " " | 1127 - 1992 |
| | Daka 2771 (Gawaher) | Dekalb | 1127 - 1992 |
| | Taba | Pioneer Hi-Bred | 457 - 1991 |
| <u>f.2X Yellow</u> | Hediah DK 2770 | Dekalb ElNil | 1620 - 1993 |
| <u>g.3-Way White</u> | Hybrid 310 | ARC-FCRI | 1189 - 1989 |
| | Neima-DKA 2147 | Dekalb | 1127 - 1992 |
| | Hybird 320 | ARC-FCRI | 1127 - 1992 |
| | Hybrid 321 | " " | 1533 - 1993 |
| | Hybrid 322 | " " | 1533 - 1993 |

| <u>Crop</u> | <u>Variety Name</u> | <u>Breeder/ Developer</u> | <u>Registration No. & Date</u> |
|-------------|---------------------|-------------------------------|--|
| | Watania 1 | Nat. Seed Co. | 749 - 1994 |
| | Pioneer 3057 | Pioneer Hi-Bred | 390 - 1995 |

| | | |
|-------------------------|-----------------|-------------|
| PGS - 320 (Meina) | Misr Hytech | 1360 - 1995 |
| Pioneer 3052 | Pioneer Hi-Bred | 18/03/96 |
| EGAS-3 | EGA.S | 18/03/96 |
| h.3-Way Yellow Giza 351 | ARC-FCRI | 1533 - 1933 |
| Giza 352 | " " | 1533 - 1993 |

MARKET CONTROL OF SEEDS

Seed Control Systems

There are two major systems for the regulation and control of seeds used for planting: seed certification and market control or truth-in-labeling. These two systems are usually viewed and handled as alternatives although in some countries they are designed and established as complementary or supplementary.

Seed Certification. Seed certification is widely used, very rigorous and comprehensive for maintaining and assuring the quality of seeds made available to farmers for planting. It was developed early in this century as scientific plant breeding began to develop improved varieties of crops that were indistinguishable in the seed stage. Some system was needed to maintain varietal purity and, most importantly, to assure farmers that seeds they purchased for planting were of the variety stated and desired. Since the availability of improved crop varieties to farmers was and still is deemed to be in the common or public interest, seed certification was organized and continues as an "official" government or legally sanctioned/authorized and, most often, compulsory service that is closely coordinated with extension and farmer education programs.

Seed certification is a very comprehensive quality control/assurance system. Essentially all aspects of seed multiplication/production and marketing from approval of seed producers to labeling of seeds for marketing are regulated and controlled through protocols, prescribed criteria and standards, inspections, and even "post controls." In countries where plant variety evaluation and registration is compulsory, control is extended even to the varieties of seeds produced since only registered varieties can be certified.

In a broad sense, seed certification has three major roles and functions:

- Maintenance of genetic integrity of crop varieties during multiplication and production and assurance of varietal purity for both the sellers and buyers of seeds.
- Achievement and maintenance of high levels of other seed quality attributes, especially physical purity, germination and seed health, during production, processing, storage and marketing.
- Extension and farmer education campaigns in areas of crop improvement and adoption of high performance varieties.

The roles of seed certification have been very succinctly captured and summarized in terms of broad purposes:

"The basic purpose of certification is to maintain and make available to the public sources of high quality seeds and propagating materials of superior varieties grown and distributed so as to insure genetic purity." (A. W. Young, 1960.)

"The purpose of seed certification is to give the consumer (cultivator) an assurance regarding some important points of quality when they cannot be readily determined by examination of the seed itself." (Anon., FAO, 1959.)

Market Control of Seeds. The market control of seeds is perhaps better known as control by truthfulness-in-labeling. It is based on the dual premises that the rights of customers to be informed about the products they purchase and the rights of producers to produce them with a minimum of regulations and "official" oversight can be conveniently and adequately guaranteed by requiring products (i.e., seeds) offered in the market to be completely and truthfully labeled for prescribed quality factors that can affect their value and/or performance. The market control system for seeds recognizes that production procedures do affect quality but takes the position that the producer should be able to organize his business and conduct operations in ways he deems best and most efficient to achieve acceptable and/or prescribed quality standards for the seeds he produces and markets without encumbering regulations and bothersome monitoring. Producers who for various reasons cannot or do not produce seeds that meet prescribed quality standards will be sorted out at the market place by control measures and by competition. Market control as it might be installed in Egypt is presented in detail in later sections.

Seed Control in Egypt

Situation up to 1992/93. Until a few years ago and even continuing into the present to a substantial extent, "seed certification" and contract seed production in Egypt were inextricably mixed in concept as well as in activity and operations. "Certification" was generally perceived, organized and carried out as a supervisory function or activity in seed production rather than as the separate, independent, officially sanctioned objective quality control system that it is and must be. As a consequence most of the crucial controls in certification such as field and facility inspections were routinely handled as production operations or production supervision activities. Responsibility for quality assurance/control was divided among CAS, EAO (Egyptian Agriculture Organization) and PBDAC, the three main agencies involved, with the result that it was overly diluted and mostly misplaced. In many instances CAS was held responsible for quality problems related to activities performed or not performed, i.e., omitted or overlooked, by the other agencies. Indeed, the omission or overlooking of operations and/or processes was often in their economic interest since they performed their activities for fees based on units of seeds handled. Recognition and full appreciation that bonafide, internationally acceptable seed

certification must be performed by an agency independent and wholly separated from the production functions was gained in 1993 during planning of the seeds sector reforms and reorganization CAS to achieve the desired separation in functions became a key reforms and an appropriate decree was issued. Reorganization, however, was only fully authorized by the Central Administration on Organization in 1995. Presently, CAS is being separated into a Central Agency for Seed Testing and Certification (CASTC), and a Central Agency for Production of Seeds (CAPS). This reorganization involves the separation of functions, budgets, physical facilities, vehicles and the reassignment of more than 5000 personnel at the center and in the governorates and down to district level. It has been difficult and traumatic thus the gradual and deliberate pace of reorganization is not surprising.

It should be noted that considerable, even surprising, progress has been made in the quality assurance and control of seeds in Egypt in the 1990s. This progress is very evident in the present conceptualization of a "seed industry", in the planning and implementation of reforms and improvements, in the reorganization underway, and, most importantly, in the quality and appearance of seeds marketed. While much remains to be done to institutionalize and extend the recognition and appreciation of seed quality developed in the past few years and the control and operational procedures that have evolved out of these gains, a very adequate and progressive framework for further development is now established. An important task is to ensure that it is sustained.

Seed Certification in Egypt. Egypt has elected to establish a compulsory seed certification system for the major field crops, e.g., wheat, maize, rice, faba, cotton, lentils, that will be compatible with the OECD Seed Certification Schemes established in the European Union. It has been assisted in this area through training, seed testing equipment, vehicles and advisory services under NARP, the long-term GTZ projects one of which is currently focussed entirely on certification, and some French financial aid. The legal underpinnings for certification are in the new seed law before the parliament and in many Ministerial decrees issued in anticipation of the new law but under the authority of the present legislation. As discussed above CAS is being reorganized into a new Central Administration for Seed Testing and Certification (CASTC) with responsibility for operation of the certification system along with related services such as seed testing, extension, technical assistance, and informational services, and a Central Administration for Seed Production (CASP) with responsibility for production and marketing of seeds that remain in the public sector. Thus, all of the elements needed for a bonafide certification system appear to be in place or provided for, possibly excepting training. While this does not mean that full establishment of certification throughout Egypt can be expected within the next year or two, it does mean there are no significant impediments to realization of this goal over the next five years or so. Certification is being implemented regionally by governorates with the expectation that when it is well established and functioning in several regions and governorates, these will serve as models and training arenas for its establishment in the other regions and governorates.

Full scale certification in Egypt is being limited to the most important field crops taking into account resources available and costs/benefits, e.g., wheat, maize, rice, faba, lentils, onion, barley and cotton. There is no plan or desire to extend "certification" to the vegetable, forage and minor field crops. The quality of these kinds of seeds will be controlled at the marketing stage through implementation of so-called "market control" as presented in detail in later sections. Certification is reasonably well established in the several governorates targeted by the long term GTZ funded improved seeds production and distribution programs and is to be extended country-wide under the present GTZ companion project on Seed Certification and its programmed follow-ups.

As already pointed out the present certification emphasis is on the main stream, important field crops. In the near- and mid-term, experience and resources will probably limit certification to the most important and "strategic" food and feed crops. Considering both the resources required and the probable benefits, even in the long term, certification should probably be limited to these select seed kinds. For other kinds of seeds, and there are many other kinds planted in Egypt, for imported seeds, for seeds of main crops that might need to be produced outside the certification system, control of quality can be most conveniently and economically applied at the market level through appropriate regulations requiring the labeling of seeds offered in the market for specified quality factors and associated information on source and seller with enforcement through licensing of seed merchants and inspections of seeds in the market for truthfulness-in-labeling.

Market Control System for Egyptian Seed Industry

As its name implies, market control is applied to seeds offered for sale to farmers in specified ways in the broadly defined marketplace. The main mechanisms of control are the requirement that all seeds offered for sale be labeled for specified quality attributes and/or meet prescribed minimum quality standards and inspections of seeds in the marketplace to determine compliance with labeling requirements and minimum standards and the correctness or truthfulness-in-labeling. The usual interpretation of truth-in-labeling regulations is that the labels attached to seed packages and accompanying information as applicable must contain the prescribed information on quality and can contain other information useful to the purchaser if it is truthful and not misleading in any way. The inspections made in enforcement of the regulations on market control or truth-in-labeling include examination of business records on the seeds offered for sale, inspection of the packages of seeds or loose seeds available for purchase for presence, form, and completeness of labeling, and sampling of the seeds for testing to determine if the quality information and data on the label are accurate within prescribed tolerances.

Requirements. The requirements for installation of a market control system for seeds are:

- Legal provisions in the seed legislation or law for required labeling of seeds, enforcement procedures, i.e., inspections, official testing, and assessment of penalties;
- Decrees promulgated under the law and in conformity with its intent that establish the implementation and enforcement authority, prescribe the required labeling, authorize inspections and testing, and set forth the procedures for determining violations and assessing penalties;
- An implementing agency with adequate inspection staff and a seed testing laboratory.
- Adequate and assured funding for implementation and enforcement in form of dedicated provision on the budget of the Ministry of Agriculture or major unit thereof;
- Legal provisions in the law for registration and/or licensing of persons or firms engaged in selling seeds.

Information Required on Label. The information specified to be on the label required on all containers of seeds offered for sale varies according to the degree of control desired. For major field crops the information is usually rather detailed as follows.

- Name and address or code number of seller.
- Lot or identification number.
- Kind (species) and variety of seeds in the container.
- The percentages by weight of pure seed, other seeds and inert material in the container.
- The percentage by number of seeds that produce normal seedlings, i.e., germination.
- The name and number per unit weight of seeds of specified weeds or other crops present as contaminants in the container, and the month and year in which the test was made to determine germination percentage.
- The country or state where the seeds were produced.
- The proper name of any chemicals applied to the seeds with appropriate warnings to purchasers as indicated and specified.

- The net weight of seeds in the container.

Truth-in-labeling is often combined with minimum quality standards, especially for many vegetable and ornamental species, to produce an abbreviated label, e.g.:

- Name and address of seller.
- Lot or identification number.
- Kind and variety of seeds.
- Statement that seeds meet all minimum quality standards.
- The proper name of any chemicals applied to the seeds with appropriate warnings to purchasers as indicated and specified.
- The net weight of seeds in the container.

In some countries for some species seeds that do not meet minimum standards can be sold provided they are labeled as substandard with appropriate data, e.g.:

- Substandard for Germination, 70 %; or
- Substandard for Pure Seeds and Inert Material - 93.50 % Pure Seeds, 6.50 % Inert Material.

Inspections and Enforcement

Truth-in-labeling type seed control is monitored and enforced at the marketplace. Trade and marketing of seeds among producers and/or wholesalers is not controlled unless one of the parties to a transaction, i.e., seller or buyer, specifically requests the implementation agency to review records, draw sample(s) and verify labeling. Control, therefore, is focussed on the "market" where farmers buy seeds they need for planting, i.e., retail market or level. Seed merchants or retail dealers in seeds are usually required to register, i.e., dealer registration, and obtain an annually renewable license for a prescribed fee which varies among countries from substantial to very nominal. The main objectives of registration and licensing of seed dealers are to a) identify and register all persons or firms engaged in sale of seeds to farmers and gardeners which, of course, is the first and most important step in implementation of market control, and b) to provide for a simple and effective penalty for violation of provisions of the market control system, i.e., withdrawal or cancellation of registration and license to sell seeds. A secondary objective of registration and licensing of seed dealers is to obtain revenues for a least partial support of the control system.

Implementation and enforcement of truth-in-labeling or market control of seeds is accomplished through education of seed dealers in the provisions of market control so that they fully understand what is required and how these requirements can and must be fulfilled, monitoring and inspecting seeds being offered in the market to farmers and gardeners, and determination of violations, issuance of "stop sale" orders and assessment of penalties.

The critical measures or activities in market control of seeds are:

- Monitoring the "market" to inform vendors of seeds that registration and a license is required and determine whether they register and obtain a license and renew it as specified.
- Monitoring the "market", inspecting inventories, and drawing samples for official testing to determine whether seeds offered for sale or in inventory for marketing are properly labeled and records pertaining thereto are in order. "Stop sale" orders can be issued for lots (identified batches) of seeds that are not labeled or incompletely labeled, or have an expired germination test date and other discrepancies and violations with labeling requirements that are obvious or can be detected by visual inspection, i.e., without laboratory tests. This sort of monitoring and inspecting is done without prior notice and on a more-or-less random basis as it is usually not necessary to inspect all lots of seeds marketed to ensure compliance with the labeling and related requirements.
- Testing of officially drawn samples in an official laboratory to establish data for the seed quality attributes that can only be established through testing, i.e., varietal and physical purity, number of contaminating seeds per unit weight, the germination percentage, selected aspects of seed health and so on. These data or results are then compared to those stated on the labeling with appropriate applications of tolerances or possible statistical variances. If the data stated on the label is in tolerance with the result obtain in official testing, the seeds are in compliance with the regulations and no further action is taken. On the other hand, if one or several of the label statements or claims are out of tolerance with the result or results of the official tests, the seed lot is considered to be not in compliance with or in violation of the market control regulations and one or more of the following actions are taken: a) an inspector assigned to the territory in which the seeds in question are being marketed is notified of the violation and authorized to issue an immediate "stop sale" order on the mislabelled seed lot; b) the dealer or vendor of the mislabelled seed lot is order to relabel the lot to conform with the quality established by the official tests if the discrepancy is not so great as to render the lot unfit for planting; c) order the lot withdrawn from sale and disposed of as feed or industrial product (e.g., oil seeds) feed if the quality found by official testing reveals that the seeds are unfit for planting, e.g., germination below

minimum standard, say 60%; d) inspector determines that the seed lot has been relabelled properly and cancels stop sale or that lots unfit for planting are disposed of in the proper way.

- Violations can be handled and penalties assessed administratively for minor violations and in civil courts for serious with-intent violations. The penalties can be as simple but effective as cancellation of license to sell seeds and/or publication of names of violators, or involve monetary fines, seizure of seeds, and presumably imprisonment if the violations were multiple, flagrant and seriously damaged farmers.